

What is claimed is

1. A zero mounting force solder-free connector for use with a receiving substrate, the connector comprising:

at least one pin adapted to cooperate with an opening in the receiving substrate such that when the pin is in a first position the pin freely enters the opening, and when moved to a second position the pin binds in the opening and thereby becomes centered in the opening and establishes a mechanical connection with the opening and an electrical connection to a conductive circuit pathway on the receiving substrate.

2. The connector as in Claim 1, wherein the pin has a substantially elliptical cross section.

3. The connector as in Claim 2, wherein the opening in the receiving substrate has a substantially elliptical cross-section that mates with the pin when the pin is in the first position.

4. The connector as in Claim 3, wherein movement of the pin from the first position to the second position is rotary.

5. The connector as in Claim 4, wherein the opening is plated through.

6. The connector as in Claim 1, wherein the pin has a substantially oval cross-section.

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7. The connector as in Claim 6, wherein the opening has a substantially oval cross-section that mates with the pin when the pin is in the first position.
8. The connector as in Claim 7, wherein movement of the pin from the first position to a second position is rotary.
9. The connector as in Claim 8, wherein the opening is plated through.
10. A zero mounting force solder-free connector for use with a printed circuit board, the connector comprising:  
at least one pin adapted to cooperate with an opening in the printed circuit board such that when the pin is in a first position the pin freely enters the opening, and when the pin is moved to a second position the pin binds in the opening to thereby establish a mechanical connection with the opening and an electrical connection to a printed circuit on the board, and  
a mechanism that cooperates with the pin to cause the pin to move from the first position to the second position to thereby secure the connector to the printed circuit board.
11. The connector as in Claim 10, wherein the mechanism includes a cam and cam follower that cooperate with the pin to rotate the pin from the first position to the second position.
12. The connector as in Claim 11, wherein the cam follower includes an opening that cooperates with the pin to cause the pin to rotate when the cam is moved.

13. The connector as in Claim 12, wherein in the opening in the cam follower is provided with at least two inclined sides that intersect at an apex and cooperate with a pin portion disposed therebetween to thereby move the pin in a rotary manner from the first position to the second position.

14. The connector as in Claim 11, wherein the cam follower includes a rack gear that cooperates with a gear secured to the pin to thereby cause the pin to rotate when the cam follower moves from an initial position to an actuated position that corresponds to the pin in the first position and the pin in the second position.

15. A zero mounting force solder-free connector for use with a circuit board and a module to be mechanically and electrically coupled via the connector to the board, the connector comprising:

at least one pin adapted to cooperate with an opening in the circuit board such that when the pin is in a first position the pin freely enters the opening, and when the pin is moved to a second position the pin binds in the opening to thereby establish a mechanical connection with the opening and an electrical connection to a conductive pathway on the board, and

the pin is adapted to mechanically and electrically couple the pin to the module and thereby electrically link the module via the connector to the conductive pathway on the board.

16. The connector as in Claim 15, wherein the connector further includes a mechanism that cooperates with the pin to cause the pin to move from the first position to the second position to thereby secure the connector to the circuit board.

17. The connector as in Claim 16, wherein the mechanism includes a cam and a cam follower that cooperate with a pin to rotate the pin from the first position to the second position.

18. The connector as in Claim 17, wherein the cam follower includes an opening that cooperates with the pin to cause the pin to rotate when the cam is moved.

19. The connector as in Claim 17, wherein in the cam follower opening is provided with at least two inclined sides that intersect at an apex and cooperate with a pin portion disposed there between to thereby move the pin in a rotary manner from the first position to the second position.

20. The connector as in Claim 17, wherein the cam follower includes a rack gear that cooperates with a gear secured to the pin to thereby cause the pin to rotate when the cam follower moves from an initial position to an actuated position that corresponds to the pin in the first position and the pin in the second position.

21. The connector as in Claim 18, wherein the pin has a substantially elliptical cross-section.

22. The connector as in claim 21 wherein the opening in the board has a substantially elliptical cross section that mates with the pin when the pin is in the first position.

23. The connector as in Claim 22, wherein movement of the pin from first position to the second position is rotary.

24. The connector as in claim 23 wherein the opening is plated through.

25. A method comprising:

forming an opening in a circuit board,

inserting a connector pin adapted to freely enter the circuit board opening when the pin is in a first position, and

moving the pin from the first position to a second position to thereby cause the pin to bind in the opening and establish a mechanical connection with the opening and an electrical connection to a conductive pathway on the circuit board.

26. The method as in Claim 25, wherein the forming of the opening in the circuit board comprises:

providing the opening with a substantially elliptical cross section.

27. The method as in Claim 26, wherein the connector pin comprises:

providing the pin with a substantially elliptical cross section that mates with the elliptical opening in the circuit board when the pin is in the first position and binds with the circuit board opening when the pin is moved to the second position.

28. A method comprising:

establishing a zero mounting force solder-free connector for use with a circuit board and a module to be mechanically and electrically coupled via the connector to the board,

forming an opening in the circuit board,

inserting a connector pin adapted to freely enter the circuit board opening when the pin is in a first position,

providing an electrical connection between the module, the connector and pin providing a mechanism to move the pin from the first position to a second position, and

moving the pin from the first position to the second position, the pin adapted when in the second position to bind in the opening of the circuit board to thereby mechanically and electrically couple the pin and module via the connector to a conductive pathway on the board.

29. The method as in Claim 28, wherein the forming of the opening in the circuit board comprises:

providing the opening with a substantially elliptical cross section.

30. The method as in Claim 29, wherein the connector pin comprises:

providing the pin with a substantially elliptical cross section that mates with the substantially elliptical opening in the circuit board when the pin is in the first position and binds with the printed circuit board opening when the pin is moved to the second position.